

and either at least one absorber that consists of foamed or non-woven material or clearance at space from reverberant wall. Preferably the perforation component of film absorber is 0.3%-2% and the holes have one or more diameters of 0.1-0.8 mm and one or more hole spacings of 1-3 mm. Several film absorbers with different hole diameters and spacings may be used.

USE - For all parts of vehicle (Claimed).

ADVANTAGE - High absorption over relatively broad frequency band.

DESCRIPTION OF DRAWING(S) - The figure shows a transmission tunnel with different hole sizes in the microperforated film absorber (Drawing contains non-English language text).

Metal (Metall)

Microperforation hole size 1 (Mikroperforation Lochgroesse 1)

Microperforation hole size 2 (Mikroperforation Lochgroesse 2)

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Title Terms: COVER; MOULD; ELEMENT; HIGH; ABSORB; EFFECT; VEHICLE;

COMPONENT; ONE; FILM; ABSORB; ONE; ABSORB; FOAM; FLEECE; SPACE

Derwent Class: P86; Q17

International Patent Class (Main): B60R-013/08

International Patent Class (Additional): B60R-013/02; G10K-011/16

File Segment: EngPI

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S3

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XRAM Acc No: C00-096966

XRPX Acc No: N00-239543

**Production of roof-reinforcing, internal cladding for vehicles, passes soft foam through resin to adhere it to coverings and linings when hot-pressed to form lighter, stronger rigid molding with high dimensional stability**

Patent Assignee: JOHNSON CONTROLS HEADLINER GMBH (JOHN-N)

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Number of Countries: 025 Number of Patents: 002

Patent Family:

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DE 19847795	C1	20000504	DE 1047795	A	19981016	200028 B
EP 997265	A1	20000503	EP 99120456	A	19991014	200028

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Designated States (Regional): AL AT BE CH CY DE DK ES FI FR GB GR IE IT  
LI LT LU LV MC MK NL PT RO SE SI

Abstract (Basic): DE 19847795 C1

NOVELTY - A foamed panel or band of material (14) is wetted or saturated with a resin material (28) adherent to two covering layers (16, 18), between which it is then sandwiched. Hot pressing in a mold (40), produces the required hardened roof contour.

DETAILED DESCRIPTION - An INDEPENDENT CLAIM is included for the corresponding reinforced roof internal cladding.

Preferred features: The foam is passed through a bath of the resin, then through a calender with adjustable nip (30), pressing out surplus. Covering layers are added. The composite passes through a second calender (34), before reaching the hot pressing mold, where hardening and bonding are completed. Between first and second calenders, the foam is wetted with catalyst, which mixes with the resin in passing through the second nip, becoming distributed over the entire width. This accelerates hardening during hot pressing. The foam is 5-10 mm thick

with a density of 15-25 kg/m<sup>3</sup>, preferably 21 kg/m<sup>3</sup>. Resin content following the first calender is 200-300 g/m<sup>2</sup>. Covering layer (16, 18) weights are 160-200, preferably 186 g/m<sup>2</sup>. Outer and inner coatings have weight 10-30 g/m<sup>2</sup> preferably 20 g/m<sup>2</sup>.

USE - To make a reinforcing internal lining for a vehicle roof.

ADVANTAGE - The new lining is even lighter in weight, and has high dimensional stability. The foam used is quite soft and is brought to shape with little resistance. Once set there is little or no tendency to spring back to original shape. Resin achieves both stiffening in the required shape, and adhesion to the coverings. Stiffness can be varied, and with it, acoustic damping properties, providing selectivity against specific frequencies. Use of soft foam reduces costs and weight. No additional waterproof coating is required, saving further cost, weight and materials, when lining with kraft paper. No blow holes are formed. This and further features are discussed in the text of the disclosure.

DESCRIPTION OF DRAWING(S) - A schematic side view, shows the production line.

foamed panel or band of material (14)  
covering layers sandwiching foam (16, 18)  
resin material adherent to covering layers (28)  
calender with adjustable nip, pressing out surplus resin (30)  
second calender (34)  
hot pressing mold (40)  
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#### Technology Focus:

TECHNOLOGY FOCUS - POLYMERS - The foam is based on a soft polyurethane or a polyester. The hardening- and adhesive resin is di-isocyanate. The catalyst is a 10:1 water/amine mixture. Further materials include kraft liner paper or fleece, and glass or carbon fibers for reinforcement. Covering layers have external and internal coatings of polyolefins

Title Terms: PRODUCE; ROOF; REINFORCED; INTERNAL; CLAD; VEHICLE; PASS; SOFT  
; FOAM; THROUGH; RESIN; ADHERE; COVER; LINING; HOT; PRESS; FORM; LIGHT;  
STRONG; RIGID; HIGH; DIMENSION; STABILISED

Derwent Class: A95; P73; Q17; Q22

International Patent Class (Main): B32B-005/18; B62D-025/06

International Patent Class (Additional): B32B-005/24; B32B-027/12;

B32B-031/00; B60R-013/02

File Segment: CPI; EngPI

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Polymer Indexing (PS):

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\*001\* 018; P1592-R F77 D01; S9999 S1309-R

\*002\* 018; P0839-R F41 D01 D63; S9999 S1309-R

\*003\* 018; ND01; ND07; N9999 N7192 N7023; N9999 N7147 N7034 N7023; N9999  
N7090 N7034 N7023; K9676-R; K9483-R; K9574 K9483; N9999 N7205 N7023  
; Q9999 Q7830; Q9999 Q7818-R; Q9999 Q9234 Q9212; Q9999 Q9289 Q9212;  
Q9999 Q9303 Q9212; N9999 N6600; N9999 N5721-R; K9518 K9483; K9563  
K9483; N9999 N6940 N6939; B9999 B4988-R B4977 B4740; B9999 B5129  
B4977 B4740; B9999 B4079 B3930 B3838 B3747; B9999 B4013 B3963 B3930  
B3838 B3747; B9999 B3985 B3974 B3963 B3930 B3838 B3747; B9999 B3509  
B3485 B3372; B9999 B5141 B4740; B9999 B4842 B4831 B4740; B9999  
B3827 B3747; K9892

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S1070-R; A999 A771

\*005\* 018; D01 F07-R F73; R01740 G2335 D00 F20 H- O- 6A; A999 A771; A999  
A157-R

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